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ABSTRACT

This document consists of four papers on various aspects of development in Egypt prepared by participants in the Fulbright-Hays Seminars Abroad Program in Egypt in 1989. Four of the papers are descriptive, one is a lesson plan. The papers included are: (1) "Egypt: Transition to Modern Times" (Katherine Jensen) focuses on the role of women in Egyptian agriculture; (2) "Nature of Fundamentalism in Egypt" (Bruce Lee Mouser) provides a survey of seven books on various aspects of Islam, from primary sources such as the Koran to contemporary thought and the Muslim brotherhood's renewed fundamentalism; (3) "Egypt: Population, Food, and Difficult Choices" (Richard Riggle) attributing Egypt's economic problems to the expanding population, socialist policies emphasizing consumption rather than conservation and development; (4) an untitled lesson plan including vocabulary, source list, strategy, and activities from which students learn about the five basic beliefs of Islam, and to compare and contrast Islam with Christianity and Judaism; and (5) "Inventing Egyptian Agriculture for the Twenty-First Century" (Jack M. Weatherford) discussing the problems of desert agriculture. (DK)

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Fulbright-Hays Summer Seminars Abroad Program 1989

Egypt: Transition to the Modern World

Center for International Education
United States Department of Education
Washington, DC
1989

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PROJECT

FULBRIGHT-DOE SEMINAR, 1989

EGYPT: TRANSITION TO MODERN TIMES

Katherine Jensen
University of Wyoming

Recommendations to be Included

in

Women in Development Strategy Statement

from

USAID, Cairo Mission

to

USAID, Washington

August 1989

Date: July 18, 1989

To: Vicky Kunkle, WID Officer, USAID, Cairo Mission

From: Katherine Jensen, Fulbright Scholar

Re: WID Potential in Egyptian Agricultural Extension

Based on limited but ongoing contact since 1985 with USAID projects in agricultural research and extension, it is my assessment that sizeable untapped potential exists in using the extension service to reach Egyptian farmwomen with both technical information about agriculture and information about credit opportunities. The Egyptian Major Cereals Improvement Project (EMCIP) opened the door for work with rural women, and its successor, the National Agricultural Research Program (NARP), is poised to implement training programs targeting women (NARP Project Paper, Ammendment Two).

Although EMCIP initially had no program designed to provide women with access to new technical information (El Kohly, 1987: 23), with the appointment of a new project director in 1983, a Committee on Rural Women was formed. When I worked under WID auspices in April 1985, and January-February 1986, the Committee had surveyed agricultural tasks performed by women (EMCIP report 91), had investigated female extension agents' visits to village farmers (EMCIP Final Report, part II.B.), had done time/labor/gender case studies in four Gharbia families (never published in descriptive form), and were proceeding with a major survey of the sources, extent, and effect of women's knowledge about new technologies in agriculture (Egyptian Women in Agriculture, January 1987). All documented a higher level of participation and knowledge than expected from women in the agricultural sector.

A proposal from the Committee on Rural Women submitted to USAID in

March 1985 to train female extension agents in providing technical assistance to farm women using on-farm demonstration techniques, while supported by senior Ministry of Agriculture officials, was not implemented, partly because it was assumed that many of its elements would be included in NARP (El Kholy: 25). The original NARP project paper mentioned women only briefly as indirect beneficiaries of training and of the use of improved technologies and machinery. The Project Paper Amendment #2 focuses on technology transfer, which includes a large in-country training program for village agents and farmers, but few of the extension agents trained by NARP so far have been women (C. Brown, July 1989). Starting with winter crops training, at least seventy women will be included in subject matter specialization for field crops, animal products and horticulture. Activities have been designed in the Implementation and Financial Plan FY 1989-1990 to include women.

NARP remains in a good position to implement "women sensitive" efforts because of particular Egyptian personnel who have had ongoing commitments to working on Egyptian farm women's behalf. Dr. Abdullah Nassib, Deputy Director of the Agricultural Research Center for Technology Transfer and Training, has specifically and repeatedly requested women's programs of the Chief of Party triad. Two more important figures are the Regional Directors of Extension in Upper and Lower Egypt respectively. The Lower Egypt Director, Mostafa Abo Reya, is former director of extension in Gharbia Governorate and sponsored much of the research on women done by EMCIP. It should be noted that in 1987 in Gharbia nearly a third of the district level agricultural engineers and two-thirds of the governorate level agricultural engineers were women. The director of extension in upper Egypt, Gad el Kareem, is the former director of El-Minia Governorate, the other primary

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research site for EMCIP, where over half of the governorate and nearly half of the district level agricultural engineers were women. These two governorates had the highest proportions of female extension engineers in the country with the exception of Beni Suef (Field Staff 1987: Agricultural Extension Administration, October 1987). Both of these regional extension directors have, within the last few weeks, initiated inquiries about training efforts for women (C. Brown, July 1989). They are influential men with both current interest and good records vis a vis women's issues.

In addition, two members of the (EMCIP) Committee on Rural Women are presently in place to facilitate the training of women. Dr. Yeldez Ishak, principal author of the EMCIP reports on women, is an administrator of the out-of-country research training component of NARP, where many of the professionals/applicants are women, and Dr. Zeinab El Tobshy is coordinating the in-country training that involves women. Both are extremely competent and energetic professionals.

If the presence of women in extension is a necessary condition of WID sensitive technical assistance in agriculture (El Kholy, on Assiut, p.22), the training of both men and women to the needs of women farmers may or may not be the sufficient condition. Some concern remains about the ability of women in extension to get from the district offices to the villages and women farmers themselves. Extension guidelines currently require extension agents to be in village offices on a regular basis (four days per week) (C. Brown, notes from extension meeting, July 18, 1989). Transportation generally ranks as the greatest need in logistical assistance to the governorate offices (Background to Project Paper, October 1987), but extension appears to be focusing on this final linkage to the farmer. This

will help farm women especially, so long as the transportation focus of tehcnical transfer does not concentrate too heavily on the purchase of motorcycles.

In sum, extension now has knowledgeable and supportive people in both the Regional Extension Offices and the Agricultural Research Center who can insure the presence of women in extension throughout Egypt and oversee the widespread training of extension agents for women's technical and credit needs if they get a signal from AID that this is important and expected business. I think the time is right for an initiative from the American side.

Date: July 28, 1989

To: Vicky Kunkle, WID Officer, USAID, Cairo Mission

From: Katherine Jensen, Fulbright Scholar, former WID T.A.

Re: WID Potential in Credit Programs

While the baseline data on rates of loans to women is inconclusive, it seems clear that the efforts by APCP to increase loan rates to women is well-aimed. While Zorha Merabet's baseline study of 6,838 loans in four village banks in Qalubiya showed that women received about 20% of the total number of loans (Merabet, APCP Baseline, p.2), APCP's telephone survey of all governorates showed women as only 1.6% of the borrowers receiving 1.8% of the loans (PBDAK, APCP tables). What the Merabet study lacks in generalizability, the overall survey probably lacks in accuracy. It seems highly unlikely that the governorates of Damietta, Gharbia, Dakahlia, Giza, and Assuit collectively made 1,124,517 loans to men between July 1, 1987 and March 31, 1989, and not one to women during that period. Whereever the truth lies, women are nowhere near equity in their utilization of PBDAK credit opportunites.

APCP is well positioned to effect changes in this situation through its linkages to the village banking system. "WID sensitive" training can be provided bank officers through regular semiannual training sessions. Women may be appointed to some loan committees, either via their banking experience and function or via the representation of extension engineers on loan commitees. Where this is done, however, it seems essential that the women be selected for her banking and/or agricultural expertise rather than as a gender watchdog alone. Finally, and perhaps most important, APCP can help to disseminate information about agricultural and small enterprise

loans through a variety of means, perhaps to include wall posters, extension agents, and the mass media.

It seems a wise decision to do pilot studies of the non-collateral credit packages in vegetable pickling and milk collection before launching those projects full-scale. My field experience surveying use of pesticides herbicides, and fertilizers has produced some doubts about credit packages in general, as opposed to open loans, but I have become somewhat convinced that the packages are as important as guidelines to village bankers as to borrowers. Nevertheless, pilot research might demonstrate market potential for pickled vegetables, the ability of milk collection enterprises to break into milk monopolies, and the maintenance of entrepreneurial authority by women when pickup trucks are used for milk collection, as well as exploring alternative possibilities in the processing and packaging of food products.

However, sponsors of these credit packages should not lose sight of the fact that women have in the past taken loans for activities distributed in ways very similar to men's loan needs (Merabet, APCP Baseline, chart BR2, p. 4) and that women may well consider themselves farmers to a higher and increasing degree than has been traditionally considered (Ishak, et al, Egyptian Women in Agriculture, and EHCIP report #91). Agricultural inputs and livestock may well remain the greatest needs for loans, regardless of opportunities in small enterprises.

On the other hand, the Small and Micro Enterprises Project provides a new opportunity to test the integrative approach to credit for women borrowers, based on its focus on very small enterprises, lack of collateral requirements, neighborhood loan offices, and adjustable terms of credit. Accompanying research as this project is implemented can provide information

about projects which assume and encourage the participation of women without targeting them specifically.

Finally, while payroll data analysis and subsequent training opportunities for women in the PBDAK headquarters bank may not have direct effect on opportunities for village women, it remains a useful and inexpensive effort on behalf of women's leadership in the urban sector. Unless project beneficiaries are limited to village women, the roles and status of women in the central banking system remains a significant WID issue.

Ultimately, better communication between projects involved in agricultural assistance and credit opportunities might streamline the efforts to attend to gender issues. For example, extension agents might help disseminate credit information along with technical transfer, so long as they do not become perceived as collection agents of PBDAK. Loans to bank officers and extension agents for purchase of vehicles, with repayment tied to rates of travel to villages, might improve contacts with village women, so long as loans are not limited to vehicles in/on which women may not ride. Review of existing research in these areas can speed the process from collecting more information to making entrepreneurial activities more widely available to Egyptian people.

INTERVIEWS

In addition to multiple meetings with Drs. Lakanny and Zoghby of the Desert Research Center.

Vicky Kunkle, Women in Development Officer, USAID, Cairo Mission

Coleen Brown, Co-Chief of Party, National Agricultural Research Project, Agricultural Research Center, Ministry of Agriculture/USAID

Zorha Merabet, North South Consultants Exchange, Director, "Agricultural Production and Credit Project, Baseline Study/Women in Development Specialist Report"

John Foti, Project Director, Agricultural Production and Credit Project, USAID, Cairo Mission

Heba El Kholy, formerly of Environmental Quality International, Director, "Women in Development Assessment of Selected USAID-Financed Projects: Final Report"

Ken Lyvers, Project Director, National Agricultural Research Project, USAID, Cairo Mission

Youssef Abdel-Khelick, Extension Coordinator, National Agricultural Research Project, USAID, Cairo Mission

Lottie Erickson, Program Evaluation Officer, USAID, Cairo Mission

Karl Jensen, Project Director, Small and Micro-Enterprises Project

Date: July 28, 1989

To: Vicky Kunkle, WID Officer, USAID, Cairo

From: Katherine Jensen

Re: Recommendations for WID activities in NARP and APCP

National Agricultural Research Project, Technical Transfer

1. Make winter crop training in NARP available to women in extension to improve on the summer crop training in which none of the 900 ag engineers were women. A goal that 20% of the 2000 winter crop participants be women is laudable, although it should be noted that while in 1987 51.12% of the 178 governorate engineers were women, only 11.03% of the 571 district ag engineers were women, and the 4403 village agents were not disaggregated by sex. (Mostafa Abo Reya this week chose 70 as a reasonable goal.)

2. Provide for the transportation of women (perhaps via public transport) to permit their participation in the (regular?) training plan.

3. Focus on women's needs in particular aspects of the curricula in field crops, animal production, and horticulture.

4. Reconstitute the Committee on Rural Women under NARP with the implementation of technology transfer, as it is not pesently functioning in full capacity in the Agricultural Research Center.

Agricultural Production and Credit Project

1. Focus specifically on the credit needs of and opportunities for women in a particular section of the regular semiannual training of village bank officers.

2. Include women on loan committees where they are available either by virtue of appropriate banking experience or their participation as agricultural engineers/agents with village farm assignments.

3. Make the dissemination of information on credit for women a responsibility of the village banks, by whatever means seem most appropriate locally.

4. Pilot test credit packages for small enterprises targeting women to determine suitability and marketability, as well as alternative possibilities.

5. Consider targeting the group between 40 and 50 years of age, the largest group of APCP participants in the baseline study, who generally represent women who have finished their childbearing responsibilities, who still have considerable work life ahead of them, and who, because of differential in age of spouses, are likely to face widowhood in the near future.

6. Survey status of women in PBDAK headquarters and provide training for upward mobility and leadership potential of female staff.

1 August 1989

1989 EGYPT SEMINAR "TRANSITION TO MODERNITY"--individual research project in "Nature of Fundamentalism in Egypt."

From: Bruce Lee Mouser, Professor
Department of History
University of Wisconsin-La Crosse
La Crosse, Wisconsin 54601
Tel: 608-784-7928

REPORT:

Overview:

This report concerns not a project completed, but rather a course of study which evolved after I reached Cairo and which will serve as a base upon which more focused readings will continue. My original intent was to sort out the differences between Sunni, Sufi, and Shi'a as these relate to the resurgence of Islam, with the plan to develop a course at my home institution in Contemporary Islam. After it became clear that the seminar would not focus on contemporary/modern Egyptian society and that I would obtain little reinforcement from the scheduled lectures, I met with Abdullah Schliefer, my advisor, to work out a course of study to compensate. Abdullah recommended concentrated readings, first in selections from the Koran and

Hadith, then in prophetic views (1940s) of potential problems in modernization, and finally in selections from Islamic thinkers of the present. Most of these works were in primary form, a type of reading which I generally avoid at all cost. Without Abdullah's guidance and encouragement, I doubt that I ever would have read these pieces.

Abdullah's rationale for selecting these works was to establish a basic understanding of the concepts of the Umma (the community), the Caliphate, the Will of God, the Expected Deliverer, the Jihad, and the relationship of Dar El-Islam to the non-Moslem world, as set down in the Koran and Hadith. With that base in place, the writings of nineteenth and twentieth century Islamic thinkers could be better understood as they relate to a perceived deviation from the guidelines set down in the Sunna. The final step to contemporary thought, especially as it relates to the Moslem Brothers and renewed fundamentalism, might be interpreted as a return, potentially, to the Islamic way (tarik).

In the course of this six-week study, I read seven books. These included:

John Alden Williams, Themes of Islamic Civilization (1971).

Hamilton Gibb, Modern Trends in Islam (1947).

John Esposito, Islam and Politics (1984).

John Esposito, Voices of Resurgent Islam (1983).

Karen Aboul Kheir, "The Modern Brothers: Quest for an Islamic

Alternative" (M.A. Thesis: AUC 1983).

Gillis Kepel, The Prophet & Pharaoh (1985).

Johannes Jansen, The Neglected Duty (1986).

Of these, the most difficult to read and understand was Williams, primarily because it contained only primary material from the Koran and Hadith, albeit selected and arranged into useable topics. I fought my way through this book but now understand why Abdullah insisted that I begin with basics. Gibb's work on "Modern Trends" was/is a 1940s prophetic and brilliant view of conflicting currents within the Islamic world, addressing problems of accommodating Islam to the technology, process, and power of the West. Having read Gibb quickly, I now know that one should digest this work slowly and completely. The two books of readings by Esposito covered primary writings from the nineteenth and twentieth centuries on a worldwide scale. Of particular interest to me was the prominent place of Egypt (and El Ashar), both politically and educationally, as a source of thought during this period of dominance by European powers. These thoughts were further reinforced by contacts with contemporary students who attend universities in Cairo. The last set of readings (Kepel, Jansen and Karen Aboul Kheir) relate to the resurgence of religous fundamentalism in Egypt.

Observations:

Williams and Gibb were excellent, and I am glad that I struggled through these works. Abdullah is correct--resurgent

and modernist writers cannot be understood without a primary focus on the Koran and the Hadith. That view was reinforced in nineteenth century writings and further reinforced with contemporary events in Egypt.

In observations outside the formal readings, I found that, while few average Egyptians are knowledgeable about the Sunna from first-hand experience, the lessons and themes of the Sunna have been incorporated into the social fabric and are difficult to differentiate. Each of the concepts (themes) mentioned above are basic to understanding contemporary Egyptian society, whether it is Islamic or Christian (very much the same as the former). Perhaps most interesting is the willingness/requirement to defend socialist, albeit communalist, ideals with reference to the Sunna. Equally impressive is the commonly held belief that the Koran is absolute truth, that the Arabic language is the most perfect language on earth, and that the Arabs are the chosen people, with the ideal cultural system.

My understanding of fundamentalism has been improved significantly because of readings and discussions with Abdullah. At the same time, my simplistic view has been complicated realistically by detailed study of various currents running within the back-to-basics movement. My Egyptian friends seem to be equally confused and divided in their assessment of the worth/potential direction of the movement. Most see it only as it relates to the Egyptian scene; few think beyond Egypt's boundaries to the Islamic world. Readings about the importance

of fundamentalists at major universities in Cairo and discussions with Egyptian and Malay (others also) students at Ashar has reinforced, for me, the conclusion that what happens in Cairo has a direct effect on rising fundamentalism elsewhere.

Aside:

Six weeks in Cairo, outside the structured format, provided ample opportunity to investigate several facets of Egyptian life that interested me. I have collected notes on the following topics and may write them up later.

1. The Egyptian sense of humor and how language becomes the most important ingredient. These observations come from associating with Egyptian comedians.
2. The modern disco scene in Cairo and how the American (female) students at AUC fit into that scene, and why they go where they go.
3. Prostitution--observation, rather than participant-observation.
4. The code of ethics practiced by street hustlers--those Egyptian (and others) who cirle tourist hotels to assist tourists in purchases and other things. I learned a great deal about how these people work, the kinds of questions they ask tourists, commissions they receive from shops, bribes they pay to police, and the mechanics of cut-throat competition in the Cairo market. The hustlers were remarkably frank with me (perhaps because I wasn't the normal

tourist nor a customer) and they were willing to tell me about their trade.

5. Candid views of Nasser and Sadat. Fortunately, I can survive on few hours sleep, a convenient circumstance considering the fact that the Odeon Palace Hotel has an excellent bar/restaurant that operates 24 hours daily and is frequented (late) by businessmen and artists. I have collected comments on land reform, taxes, incentive (and lack thereof) from these folk.

6. The Army. Egypt has a large underemployed population many of whom are in the army. I met many officers and non-commissioned types who talked a lot. Very interesting

Egypt: Population, Food and Difficult Choices

by

Richard Riggle

Coe College

Presented to

United States Department of Education

Fulbright Seminars Abroad Program

1989

Egypt: Population, Food and Difficult Choices

An increasing number of countries throughout the world, particularly those in arid or semi-arid regions, are unable to produce enough food for their rapidly expanding populations. As population increases, there is a proportionate increase in the demand for food since people do not voluntarily adjust their diets because of limited internal agricultural production capacity. When the demand for food exceeds the carrying capacity of land, greater demands are placed on productive soil in an effort to maximize yields while food supplies are supplemented with imports. In recent years, the use of improved varieties of seed, in concert with heavy applications of petrochemical fertilizers, have resulted in short-term food gains, but at the cost of long-term deterioration of the soil substance. Extensive use of chemical fertilizers, herbicides and pesticides reduce the organic content of soil resulting in loss of fertility and ease of erodibility (Paddock, Paddock & Bly, 1986). The entire network represents a downward spiral that accommodates immediate profits over long-term sustainability. In addition to the biological factors of this network, there is the social phenomenon of 'urban drift' which further complicates the population/food ratio by reducing the volume of existing agricultural land.

Egypt is a case in point. The country's economic problems have, to a great extent, been the result of an expanding population of 54 million people coupled with 30-year-old socialist policies that have placed an emphasis on consumption rather than conservation and

development (Slavin, 1989). During the 1970s Egypt was self-sufficient in food production. There was a balance between farm output and the consumption rate of Egypt's human population. However, in the latter portion of the 1980s, the national government has imported more than half of the countrys basic foodstuffs. When the purchase of food is calculated with other subsidized commodities, Egypt's capital outlay has been approximately 3 billion dollars a year (Lamb, 1988).

Food supply has always been the first measure of a nation's strength. In recent years, grain reserves, particularly wheat, corn and rice, have been useful indicators of food security (Thomas, 1989). Fisher (1988) reports that Egypt's consumption of wheat has increased by 56 percent since 1960, making it the world's largest consumer of that grain. At this rate, the country's production of wheat cannot meet annual consumption requirements, let alone contribute to a reserve. Food dependence is further complicated by the government's inability to generate foreign exchange earnings to offset the cost of imported commodities. Wheat and flour obtained from the United States and European countries are usually acquired on credit, however, 200,000 tons of wheat were recently purchased on the open market. This is the first time in recent history that Egypt has had to pay cash for wheat (Slavin, 1989).

Since 99 percent of all Egyptians live along the Nile River and Suez Canal, which accounts for 5 percent of the country's total surface area, there is considerable competition for the land. The Nile flood plain, particularly in Middle Egypt, is composed of very fertile soil, while the extended Nile complex constitutes the bulk of Egypt's agricultural land. Unfortunately, this rich, level land adjacent to the country's primary source of usable water is also the most desirable

area for urban development. It is estimated that urban drift, leading to the unplanned and uncontrolled sprawl of the cities' margins, has taken 40 thousand acres of agricultural land out of production. This means that the remaining arable land is placed under greater stress. Despite such an adverse condition, Egypt's food production is increasing at approximately 2 percent a year, primarily as a result of intensified use of petrochemicals and/or placing marginal or new land into production. Using hundreds of grams of plant nutrient per hectare of arable land as the standard of measure, Egypt has increased it's fertilizer consumption from 1,282 in 1970 to 3,473 in 1985 (World Bank, 1988). It should be noted, however, that the 2 percent increase in food production is offset by a 5 percent annual increase in consumption (Lamb, 1988).

Cairo is a prime example of urban sprawl. It is not only the capital of Egypt, but also the cultural hub of the Islamic world. The city serves as a magnet for migrating groups who frequently establish alternative settlements wherever they can, and under whatever conditions exist. The propagation of established Cairenes, coupled with migrants, has resulted in a metropolitan population of approximately 14 million people. (Note: Any statistic relating to human populations in Egypt should be considered suspect data in that accounting procedures are unreliable.) With such a expanding population, housing is at a premium. The need for more living space leads to uncontrolled expansion of the cities parameters. Urban sprawl frequently takes the form of movement away from the center of the city by gradually adding to the outer margins. However, a different pattern, that might be called the 'corridor effect,' can be found on the western edge of Cairo between el Giza and the Great Pyramids. In

this case, a suburb and a tourist attraction are connected by four-lane, paved roads. Under such conditions, there is a tendency to fill-in the space along the corridor with commerical and residential development. Unfortunately, the space in question is some of Egypt's most productive agricultural land. As one travels the Al-Ahram, for example, new concrete high-rises are intermittently gaped by agricultural plots and grazing livestock. This visual example provides clear evidence of urban expansion infringing on prime arable land. Swanson (1989) predicts that within the near future the Great Pyramids of Giza, currently on the fringe of the Western Desert, will become a cultural oasis surrounded by urban expansion.

As one's knowledge of Egypt broadens and interrelationships emerge, it becomes increasingly apparent that the population/food dilemma is truly a complex issue having no quick or easy solutions. Public and private decision-makers are confronted with difficult choices that tax their sense of certainty. Corrective measures, if they are to be found, are likely to be drawn from one or more of the following categories:

(1) Population control,

(2) An increase in the productive capacity of existing agricultural land,

(3) An adjustment in the ratio of food to cash crops,

(4) Desert development

(5) The development of hydroponics.

Human Population

By guaranteeing a constant supply of food, the Egyptian government is actually underwriting population growth. Subsidies provide basic food security, therefore, starvation is not a motivating force in Egyptian society. In theory, a reduction in the availability of food should serve to regulate population volume by depleting the ranks of those having the least amount of purchasing power. Although such a policy may follow Neo-Darwinian principles, people react differently than animals in the bush. For example, in 1976, Egypt started to eliminate food subsidies in response to pressure from the International Monetary Fund to rationalize its economy. Egyptian citizens responded with the Food Riots of 1977. Confrontations between rioters and government forces resulted in 73 deaths, 800 injuries, and the maintenance of subsidies (Ansari, 1986). The government obtained social tranquility at the cost of economic stability. Farah (1989) reported that basic subsidies, mostly bread, would be reduced or eliminated beginning July 1989. It is difficult to determine, at this time, the extent to which the government will actually implement a severe reduction in subsidies. It would also be highly speculative to predict the reactions of the people should the reductions occur. Social history indicates, however, that Egyptians have a high level of tolerance and are slow to display civil disobedience.

The number of people living within Egypt's borders could be modified through immigration or migration. This has been the case, for limited periods of time, because Egypt is a labor-exporting country. Better job opportunities in oil-producing areas, such as the Gulf States and Libya, accounted for 3.28 million Egyptians working abroad

in 1983 (Fisher, 1989). Exportation of labor helps to reduce unemployment within Egypt's borders, and also provides an increase in foreign exchange earnings because migrant workers send money to their families who remain at home. There are two additional benefits to be derived from members of the work force migrating to other countries. When men are out of the country they are not eating Egyptian food nor are they impregnating Egyptian women. However, the major benefits derived from Egypt's migratory work force has been short lived. In 1985, as a result of political tension, Libya expelled 5,000 Egyptians. In addition, Iraq's decision to restrict the amount of money that migrant workers could send home resulted in 250,000 Egyptians leaving the country.

There has also been a change in the composition of Egypt's migratory work force. In the early 1980s, The Gulf States were engaged in a rapid expansion of their infrastructures. Consequently, there was a job market for unskilled laborers, particularly in the construction business. Now that major expansion has been completed the labor needs of the Gulf States have been limited to professional and technical fields. Selective exportation of labor has tended to have a negative impact on the growth rate of Egypt's economy. The current domestic unemployment rate is over 20 percent and the job market can not absorb the annual pool of 450,000 potential young workers (Slavin, 1989).

If a reduction in population is not feasible, baring an unforseen catastrophe, the next best option is to seek zero population growth by stabilizing the birth rate. The ratio of Egypt's births to deaths in 1986 was 34:10 per thousand population (World Bank, 1989). Between 1965 and 1986 the rate of births decreased by 20 percent while the decrease in deaths was 47 percent. There would have to be a

considerable decrease in birth rates to offset the influence of longevity. Biological means of controlling population growth are known and available, at least to the upper half of Egyptian society, which includes government agencies. Approximately 32 percent of married women, of childbearing age, are reported to use some form of contraception (World Bank, 1989). However, there doesn't appear to be any concerted effort to implement a comprehensive birth control program. Barriers to controlling the population dilemma are primarily social in that they incorporate attitudes and beliefs that are rooted in tradition.

By the standards of Westernized countries, Egyptian culture is blatantly sexist. If there is any doubt about this conclusion, interviews with Western women who have shopped in Cairo without the benefit of a male escort should clarify the issue. Male supremacy is an entrenched feature of Egyptian society. It can be found at all social levels and within both the Islamic and Coptic Christian populations. Some part of masculine identity, in concert with the low status of women, is conducive to the increase in human population. However, the level and type of education acquired by both males and females tends to be a modifying factor.

Farah (1989) reports that over 50 percent of the countries population is illiterate and that over 50 percent of the people live below the poverty level. It is assumed that there is a high correlation between the two statistics. However, there may be serious flaws in such an assumption because of the disparities in income between those working in the public as opposed to the private sector of the economy. "Teachers and middle-level bureaucrats earn forty dollars a month, about half what an illiterate maid can make working part time (Lamb,

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1987, p.40)." Nevertheless, Egypt's poor tends to be rural in origin, and follow traditional modes of thought and behavior. The family is, historically, the dominant and cohesive element of Egyptian social structure. A large family is the norm since children are still considered to be important social and economic assets. The contributions of children to family welfare is a debatable issue. It is clear, however, that in labor-intensive farming, such as cotton production, children are a major component of the work force (Hopkins, 1987). The infrastructure of rural Egypt is not as well developed as urban areas, which contributes to restricted experiences and conservative life-styles.

Urban Egypt, particularly Cairo, is much less homogenous than rural society. A visual indicator of diversity is the wide variety of attire seen along Shari Talat Harb or any other major thoroughfare. Cross-cultural encounters, representing alternative perspectives, are much more common in metropolitan areas. The citizens of Cairo and Luxor are dependent on the tourist trade and must accommodate diversity. Urban centers also offer a wider range of educational opportunities than rural areas, both in terms of quantity and quality. Those raised in a cosmopolitain environment are more likely to realize the potential negative effects of having a large family under depressed economic conditions, although there is frequently a credibility gap between knowledge and behavior.

El-Safti (1989) stated that the social differences between men and women are a matter of tradition rather than religion. This observation is most valid in reference to the legal rights of women in cases of divorce and polygamy. The hypothesis is more diffucult to support in the context of generalized male dominance. Passages from the Qur'an

could be perceived as providing males with gender license. For example, in ___ sura 2, verse 223 we read, "Your wives are a tilth. Go to your tilth as you will." Also ___ sura 2, 187 reports, "They are a garment for you and you are a garment for them. So hold intercourse with them and seek what God has ordained for you (Bucaille, 1979)." Similar passages can be found in Christian scripture, yet there is considerable difference in the degree to which overt sexism is expressed in Western countries in contrast to Egypt. Part of the explanation for this discrepancy rests in the relationship between religion and daily life. Islam is integrated within all facets of life, which makes it difficult to separate the secular from the religious elements of tradition. For all practical purposes, the perception that male dominance over women is sanctioned by the Qur'an has considerable impact on social interactions between male and female Egyptians.

During an audience with the Grand Sheik of El-Azhar (1989), the highest intellectual authority in the Islamic world, he was asked to remark about a women being elected as president of Pakistan (an Islamic state) and, more generally, about women in leadership roles. The Sheik responded that successful female leaders have been the exception rather than the rule and, therefore, do not merit consideration. He also stated that it is the role of women to manufacture and care for humankind. This is a grave responsibility that should not be taken lightly. Any debate stemming from women's rights groups is not likely to offset the Grand Skeik's position, or his influence. Egyptian women, with the exception of a minority, will continue to do their duty and produce quantities of children.

Since Egypt's 1967 defeat by Israel, there has been a groving

number of well-educated Egyptian men and women who have chosen to structure their lives around the Shari'a (Islamic law). The rationale for their choice is the belief that Egypt's failures can be attributed to the countrys deviation form the "true way." The Western press would identify such people as "fundamentalist" (a term that is offensive to some Egyptians). Because the Shari'a is viewed by others as too restrictive for a changing, progressive society, those who regulate their lives in such a legislative manner are viewed as maladaptive. Farah (1989) noted that fundamentalists see Islam as "the solution" without ever identifying the problem, or solution, in anything but abstract terms. Ambassador Basheer (1989) extended Farah's perspective by stating his belief that people who cannot adjust to the change and challenge of current times retreat to an imagined existence of fundamentalist Islam. Thus there is a conflict within the top half of Egyptian society between those who tend to be more progressive and adaptable to change with thoses who identify with tradition, the tried and true. It is unclear at this point in time, however, whether educated female fundamentalists are willing to limit their potential to "manufacturing humankind." However, their advocacy of conservative Islamic doctrine provides added weight to Qur'anic passages and judgments of the Grand Shiek.

Taking the previous factors into consideration, one is led to the conclusion that Egypt is not likely to gain any significant control over its rapidly expanding population without direct intervention by the national government. At present the Mubarak administration's policy on population control seems to be one of inaction, as opposed to the implementation of a dynamic program.

Productive Capacity

The annual flooding of the Nile River was responsible for silt and organic materials depositing layers of rich alluvial soil on Egypt's flood plain. Profiles indicate that in the first thousand years after Christ, approximately fifty inches of soil accumulated in the river valley. This means that the average annual deposit of alluvial fill was only one-twentieth of an inch. Such a small amount of soil would seem insignificant. However, Dale and Carter (1955) maintain that had the deposit been larger the flood plain would have reached an elevation that would have prohibited flooding, thereby keeping hundreds of thousands of acres out of production. The flood residue was adequate to replace the nutrients lost to cropping. Organic material contained in the soil was particularly important because humus cannot accumulate in Egypt's warm climate (El Lakany, 1989). Combined with the moisture of irrigation it decomposes quickly and is converted into living crops or is oxidized.

There was a secondary benefit derived from the annual flood that has only been appreciated in recent years. As flood waters washed over the land, damaging salts were eliminated from the surface and carried downstream. The result was a replacement of salinity rather than an accumulation. Consequently, an Egyptian civilization, based on agriculture, has been maintained for six thousand years because of a relatively balanced ecosystem.

The first Aswan Dam was constructed in 1902, under the supervision of British engineers. It was reasoned that the ability to regulate the flow of the Nile throughout the year would result in maximum agricultural production. Such control would allow farmers to plant cotton, maize and sorghum in the summer, and wheat, beans, lentils,

chickpeas and berseem in the winter. To compensate for loss of organic matter typically supplied by the annual flood, liberal applications of petrochemical fertilizers were used. Crop yields increased while the soil's volume of humus was systematically depleted. The reduction in humus was accelerated in fields devoted to large-scale cotton production since cotton leaves little organic matter in the soil (Dale & Carter, 1955).

Following the completion of the High Dam at Aswan in 1971, new agricultural problems emerged. The continuous supply of water has lead to a rise in the water-table, extensive waterlogging of the soil and a marked increase in salinity. Salt will depress crop yields by retarding growth as a result of osmotic stress in soil/water/plant interactions (Williams, 1987). It seems that in looking ahead to the benefits to be derived from the High Dam, insufficient attention was given to the potential negative effects of inadequate drainage systems. In addition to the gleying of soil there has been an increase in the occurrence of parasitic diseases such as bilharzia. The program of water release has also led to the growth of water hyacinth which has the potential of clogging irrigation systems. (Fisher, 1988).

If Egyptian agriculture is limited to existing arable land, and current farming conditions, the soil's productive capacity may be close to its peak. Heavy use of petrochemical fertilizers has already resulted in a 2 percent increase in agricultural output. However, even fertilizers have a maximum capacity to increase yields in a given volume of soil. Even though new variaties of petrochemical fertilizers are continually being introduced, it is not reasonable to expect significant increases in agricultural production based solely on applications of fertilizer.

Legumes provide two to four times the protein of cereals and are frequently used as meat substitutes. When combined with cereals - such as in the rice and lentil dish mujaddarah - complementary amino acids, the primary building blocks of protein, are produced. In addition to their food value, legumes are nitrogen-fixing plants and thereby fertilize the soil in which they grow, making them desirable elements in crop rotation programs. Because of their positive attributes legumes should be a major contributor to Egypt's basic food stock. In fact, lentils, chickpeas and faba beans are grown in Egypt, but unimproved varieties have suffered low and unreliable yields. The International Center for Agricultural Research in the Dry Areas located in Aleppo, Syria, has been cross breeding new varieties of legumes with the intent of improving their desirability as basic food crops. There has been particular success in developing faba beans that fertilize themselves and are more structurally secure. The Center has joined the Nile Valley Project in an effort to improve faba bean production in Egypt, Sudan and Ethiopia. Simarski (1989) reports that one experimental area in Egypt has increased yields of 10-20% percent. Improved varieties of legumes, resulting from conventional cross-breeding techniques, hold considerable promise for increasing the food production capacity of existing arable soils and at the same time contribute to soil development.

Biotechnology is the field of science which uses genetically-altered organisms to improve the output of plants and animals. In theory, crops would be custom designed for particular environments which would enable them to grow under adverse conditions (i.e., insects, disease, aridity, etc.). The positive potential for agriculture is exciting and expectations are high, particularly the

expectations of multinational chemical companies who are supporting and controlling most of the research in this area. With the promise of benefits, there are serious risks, such as, increased crop surpluses; soil depletion; increases in the type and amount of pollution; the loss of small family farms; and, the most threatening risk, the releasing of mutant life forms (Russell, 1987). Researchers at Stanford University have developed a process that would make it possible to transfer cactus genes to wheat, thereby reducing the need for water. In Egypt, such a strand of wheat would markedly increase food production and decrease the need for imports. The major concern at this point is that each of the major chemical companies wants to "corner the markets" for biotechnology, thereby increasing the possibility that products will be marketed before appropriate testing of their environmental impact. In his address to the Desert Development Seminar, February 15, 1989, Dr. Gerald Thomas stated that "many of the ecological implications of agricultural development programs require more knowledge of complex ecosystems and a better understanding of the interaction among the physical, biological and climatic components." We are well advised to weigh short-term profits against the long-term effects of introducing geneticly altered products into the environment. The DuPont company advertised, "Better Living Through Chemistry." It's true that many humans have vastly improved lives as a result of product development within the chemical industry, but others are the victims of Agent Orange.

Food vs Cash Crops

One of the consequences of Egypt's 1952 Revolution was a series of

land reforms. The first phase was primarily designed as an anti-feudal measure to eliminate large estates and absentee ownership. Service cooperatives were formed to link small land holders and provide a support system. Membership in the cooperatives, however, was voluntary. The second phase of reform occured in 1961, and was more consistent with socialist policy. The national government became the central regulating agency for agriculture. Farmers were required to form village cooperatives. It was the responsibility of the cooperative to regulate the distribution of such commodities as seed and fertilizer, as well as marketing crops. The government controlled the use of individual fields by imposing mandatory crop rotations on each village. Land ownership was limited to 100 feddans (1 feddan = 1.038 acres). In 1969, the third phase of land reform simply adjusted the size of an individual's holding from 100 to 50 feddans (Hopkins, 1987). It should be noted, however, that there is considerable variation in the amount of land owned by individuals since knew regulations tend not to be retroactive. For example, Tanner (1989) made reference to the Mostafa's farm that was started by the patriarch of the family in 1961 with 250 acres (100 hectares or 259.5 feddans). This was during phase two of the land reform when the maximum land holding was supposed to be 100 feddans. Although land reform addressed accessive land ownership, in reality most farming in the Nile Valley was, and is, done by fellahin (poor peasants) who rent 3 to 5 feddans of land which are frequently located at more than one site around the village. This abbreviated cronology identifies a number of factors that influence the amount of each farmer's land which will be planted to food and/or cash crops.

Aside from physical parameters, such as climate and availibility

of water, the two major factors influencing the ratio of food to cash crops are: (1) the volume of land available for cultivation, and (2) a marketing system that is beyond the control of the farmer. The smallholder does not have the monetary resources to invest in modern agricultural technology. The machinery that is available in the Nile Valley is generally too large to be used in the fellahin's small fields; consequently, cultivation and harvesting are still accomplished with animals and by hand. Only remnants of the old subsistence economy can be found in the villages of the Nile. Farmers nov tend to sell the bulk of what they grov, and purchase most goods. This means that the smallholder must maximize the benefits to be derived from the land. In addition, the Egyptian government has a monopoly on the purchase of cotton and require that yields of other crops, beyond set minimums, also be sold to the government. Unfortunately, the amount paid to the farmer is well below the free market price. Such a process generates income for the government, but makes it impossible for the small farmer to improve his condition. To compensate, farmers will try to grov crops that are not controlled by the government and yield the greatest monetary return. A case in point would be the cultivation of broccoli and asparagus. It would appear that these two vegetables are food crops; however, Egyptians don't particularly care to eat them. They are grown for sale to the luxury hotels in tourist centers. Therefore, the vegetables represent cash crops that are not controlled by the government.

Even though the farmer is able to avoid unfavorable marketing practices of the government he is still under the control of an exploitive system. The marketing process can be quite complex, involving transactions between a number of merchants. One of the most

common marketing arrangements consists of the farmer selling his crop to the village merchant, who sells to the regional middleman, who sells to the urban merchant. Hopkins (1987) explains that the one reason for the number of individuals involved in getting a crop from its origin to its final destination is that transactions are based on trust. Payment in currency is frequently delayed; consequently, the seller must trust the good faith of the buyer. The parties taking part in the exchange need to have had personal contact and know each other. The fellahin are likely to have difficulty following market prices and holding their crop until they can receive maximum profit. Rather than selling to the merchant at a desirable time, the farmer is more apt to wait until the merchant is ready to buy his crop. Of course, the transaction is regulated to produce the greatest profit for the merchant. As a result, the primary means of the smallholder generating maximum benefits is in the selection of his crops.

The Egyptian farmer is confronted with the difficult choice of selecting food and/or cash crops in particular proportions. El Kassas (1989) believes that farmers should plant cash crops because they can then buy more food than they could grow. The issue of food dependence is not as critical for El Kassas as current availability. In contrast to the Egyptian perspective of Professor El Kassas, Weiskel (1989), a Western anthropologist, strongly suggests that African nations should return to food production and reduce their dependence on Western agricultural surpluses. Both El Kassas and Weiskel have valid positions. They are caught in the dilemma of weighing short-term needs for food, shelter and fuel against the long-term desires for economic stability and environmental improvement. Weiskel himself recognizes that, "This is a syndrome of closely related social, economic and

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Desert Development

Thirty per cent of the earth's surface is arid or semi-arid and is collectively referred to as desert. In reality, such regions are very diverse in topography, parent material, climate, availability of water, and additional features (Matlock, 1981). For example, American University in Cairo's Desert Development Center (DDC) operates two experimental sites in the same geographical area with soil properties that are clearly distinguishable from one another. The soil at Sadat City tends to be calcareous, sandy in texture with a compacted surface layer covered by desert pavement. Variations in the soils of this site are attributed to differing levels of salinity, which tends to be high. In contrast, the soil at South Tahrir is very coarse with no clay fraction and having low to medium salinity. The two sites share the

features of low organic content and a low supply of most nutrients. Any effort to develop the agricultural potential of these areas must accommodate the uniqueness of each environment. "To improve soil management and enhance soil development under desert conditions, it is imperative to identify the soil factors which limit productivity at the two desert sites (DDC, 1989, p. 35)." Consequently, the first prerequisite for desert development is a complete analysis of the conditions under which the program will operate. Baseline data of this type is essential for meeting DDC's primary goal of treating the desert as a desert rather than importing loam-like soils from other regions.

Thomas (1989) notes that, "Sustainable development calls for a multi-disciplinary approach and integrated systems analysis - a better understanding of both economic and ecological systems (Desert Development Digest, 1989, p. 3)." The reference to "ecological systems" in this context includes social as well as biological and physical factors since Egyptian cultural values and beliefs are salient variables in any effort to establish and maintain a new desert community. It is, therefore, by necessity that Dr. Adli Bishay, founder and director of the DDC, has assembled a research team that is capable of addressing the issues of: housing, renewable energy, marketing, and public relations, as well as agriculture.

The multiple accomplishments of the DDC, and other research agencies, have clearly demonstrated that it is possible to produce food in desert environments. Despite the positive potential, the rate of desert development has been extremely slow, given the need for dispersing Egypt's human population and the countrys state of food dependence. As one might suspect, there are multiple reasons for the lack of progress beyond the experimental level. A listing of

contributing factors would include: conflict between the administrative personalities of various agencies; the quagmire of Egyptian bureaucaracy; and a lack of public advocacy. As one might guess, the primary deterrent is lack of adequate funding. Feasibility is one thing, cost effectiveness in quite another. Goueli (1989) reports that the cost of reclaiming a fedden of land in the 1960s was L.E. 350 while the current costs will range from L.E. 3,000 to L.E. 10,000. Part of the increses is due to inflation, but equally important are the complicating features of Egypt's topography. Low, level land that could easily utilize surface irrigation was the first to be developed. The lands currently available are of such an elevation that the water for irrigating fields would have to pumped to a height of 20-40 meters. Primary construction, the maintenance of the system, and a supply of energy to assure a constant flow of water accelerate the costs of desert development.

Although appropriate physical features are essential for a sustained desert community, they are of little value unless there are people to, operate the systems. Sadat City, for example, is a newly constructed, planned city that is located approximately half way between Cairo and Alexandria and adjacent to a four-lane, blacktopped highway. There are currently 61 companies located in the city's industrial park. Taking into consideration the "corridor effect," as well as the positive features of new, clean, well spaced housing, gainful employment and a quiet environment, one would expect this city to be a haven for those living in less desirable urban conditions. Unfortunately, Egyptians don't want to live there. Forrester (1975) warned that to overlook the social factors in favor of the physical features of development can lead to the belief that technology will

circumvent the social issues. Sadat City is a empty monument to the fallacy of such a narrow perspective.

From March 1986 to March 1987, the Desert Community Unit of the DDC conducted a study of the socio-economic aspects of the South Tahrar community. The findings of this study were consistent with the conclusions derived from previous surveys. Whether graduate farmer, smallholder or cooperative farmer, the informants were in agreement that their main problems, within the choices presented to them, centered around the link between electrical supply, irrigation and agriculture. More specifically, the government's unfair payment system and the unannounced and frequent cut-offs of electricity which prohibits the delivery of pumped water to the fields. But there have been problems of a different nature. Secondary and college graduates can obtain 20 to 30 feddan farms. These farmers are confronted with a number of serious problems including the lack of operating capital, difficulties in marketing and a lack of infrastructure that would attract families to the area (Desert Community Unit, 1987). Sukkary-Stoiba (1965) described an additional social phenomenon that has been a major factor contributing to the failure of this group's farming efforts. "Unfortunately, graduates' wives failed to rise above their Egyptian middle-class values against manual and domestic labor and consequently deprived themselves of the chance for success in Tahaddi." A lesson that has been taught repeatedly is that successful desert development programs must involve sociologists as well as agronomists.

Hydroponics

An Iowan's perspective of soil development is likely to involve

images of accumulating nutrients and biomass until an approximation of loam is achieved. Such a process is possible given the luxury of time; but when the goal is an immediate increase in food production, alternative processes must be seriously considered. Hydroponics, for example, is a procedure whereby plants are grown in a nutrient solution rather than soil. Early experiments involved producing tomatoes, in a jar of liquid medium, without the presence of any soil-like base. More recently, the DDC has built shelters in which rows of plastic lined furrows, containing gravel and a flow of nutrient solution, are used to produce quantities of vegetables. In such an arrangement, the gravel serves simply to anchor plant roots. It is apparent that hydroponics can be used in any environment containing appropriate levels of light and heat. At the Sadat City site, solar pumping is used to recycle the nutrient solution thereby avoiding dependence on unreliable government generated electricity. There are, however, limitations to substituting hydroponics for field cropping.

A critic of the DDC asked, "Who is going to pay LE 6 for a cucumber?" The question was his way of challenging the cost/effectiveness, and utility, of the DDC's nutrient film technique (a hydroponic process). In response to the question, "The DDC generates protocols that have potential for mass production. If, and when, full scale operations occur, the cost of produce will decline." Because of capital outlay and the level of technical skill required to establish and maintain the system, hydroponics is most likely to become cost/effective when utilized in "factory farms" where the current smallholder would function as an employee rather than a free agent. A food production corporation would be able to cut input costs through volume buying, the control of supply systems, and professional

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marketing. Such a concept is antithetical to the value and romance attached to small, independent, family farms. However, if one is pragmatic about human survival in Egypt, common sense dictates the establishment of noncompeting parallel systems of conventional farming and large scale coporate hydroponics. If the mass production of food via hydroponics is retarded it will be due to the lack of capital investment and/or government intervention rather than technological capability.

"Good science" takes time, energy and money. It requires painstaking analysis and evaluation of multiple variables so that the potentially devasting effects of projects such as the High Dam can be avoided. New and better ways of accomplishing a task are being developed at the same time current processes and products are operationally improved. For example, Dr. Assabghy, director of DDC's nutrient film project, and his research team are developing a new physical arrangement, the pyramid technique, that promises to be more productive and cost/effective than the current furrow process. Housing for the pyramid project was under construction during the summer of 1989. The new technique appears to be an impressive advancement in hydroponics.

Conclusions

The Egyptian government receives more foriegn aid than it can utilize. There are several billion dollars in concessionary loans and grants waiting to be used by the central bureaucracy (The Economist Intelligence Unit, 1989). Understandably, donors are frustrated and unwilling to extend the availability of aid. Egypt has requested that

funding be transferred to direct balance of payment support in the form of cash so that the international debt can be reduced. However, donors have chosen to convert financial aid to shipment in kind, principally food. This is exactly the type of arrangement that encourages consumption and detracts from the productive capacity of the Egyptian people.

Part of Egypt's foreign-aid package consists of over $67 million from the United States to assist in the development of a family planning program. In addition to money and personnel, large quantities of condoms have been provided, yet only about one third of the target population uses the devices. Either the program is inadequately designed and operated or Egyptian males refuse to use condoms. (Which may amount to one and the same thing.) Any failure to implement a workable program of population control should not be attributed to the lack of physical resources.

The external observer is led to believe that the Egyptian government's agricultural policy of aversive control needs to be replaced with incentives and educational programs that will allow farmers to make intelligent choices and operate in the free market place. The Suez Canal University has recently established a program for the education and training of agricultural engineers, extension officers and farm managers at it's El Arish campus. Graduates of such programs could provide the leadership for village support systems that would directly benefit farmers. The alternative would be the creation of one more layer in the existing bureaucratic structure.

Ambassador Basheer (1989) believes that Egypt's major battle is between productivity and the government bureauracy. The glut of public employees lacks the incentives to be productive. Many of them must

have two jobs to make a living wage. Employment is not contingent on performance, therefore, efficiency tends to be associated with personal satisfaction. In addition to the lack of productivity in the public sector, there is an overreliance on agriculture to generate income that should stem from the manufacture of finished products. Manufacturing is the only category used by the World Bank to determine Egypt's growth of production for which there is no data. There is no data because there is nothing to measure.

The English word that is heard most often in Cairo is, "Welcome." While the phrase most frequently used may well be, "No problem." Both linguistic elements seem to be significant reflections of Egyptian social thought. The first representing the need to create a positive image for the tourist in the hope that he/she will return and encourage others to visit Egypt. Tourism is a major industry that brings hard currency into the country and the numbers of people visiting the country in recent years has declined. The second may be indicative of how most Egyptian's define and respond to "problems;" this is assuming that it is reasonable to conclude that consistent expressions of values and beliefs represent a collective cultural mind-set. In the first place, most Egyptians may not realize that their country is experiencing a large increase in population, food dependency or soil degradation. If they are aware that such issues exist, they may not recognize them as problems. Where there is no problem there is no need for a solution. However, "no problem" may mean that a conflict or concern has been identified, but there isn't much anybody can do about it. One must learn to adapt and have faith that everything will "work itself out." (Inshallah, God willing)

It would be far too easy to place the blame for Egypt's

population/food dilemma on an ineffective central government. There isn't much doubt that the structure and policies of Egyptian government need to be vastly improved. However, the people seem to place the burden of the country's welfare entirely on the government without assuming much in the way of personal responsibility. An ecological perspective would suggest that improvement in the quality of life involves "bottom-up" as well as "top-down" policies. The success of any government program to control population is dependent on the will of the people successful. Those effected by a program or policy must perceive "ownership" in its implementation or it is likely to fail. One means of obtaining a sense of ownership is to become personally involved. For example, Australia, like Egypt, is faced with the problem of salinization. However, the government in Melbourne believes the people's knowledge and understanding of the problem is just as important as technological solutions (Thompson, 1989). Since the soil is waterlogged, trees are planted to absorb groundwater and allow rain to wash accumulated surface salt to lower strata. The Girl Guides, along with others, have planted over a million trees. "A major component of the public awareness campaign puts responsibility for preventing salinization in the hands of the people. If the farmers realize that the government won't bail them out, they may stop using cheap but harmful land mamagement practices (Thompson, 1989, p. 5)."

The issues of population control, food production and desert community development involve complex interactions between elements of the natural, pyhsical and social sciences. To think that science and technology alone can improve the quality of life in a region is to engage in self-deception. The technological aspects of desert development are much less problematic than human involvement. Egypt is

an ecosystem in which humans are major, but not exclusive, actors. The goal is achieve, and maintain, balance within the system.

Lesson Plan

Objectives: The student will be able to describe the five basic beliefs of Islam.

The student will be able to describe the practice of Islam among some Muslim Egyptians.

The student will be able to compare and contrast Islam with Christianity and Judaism.

Sources: the videotape, Islam. Student textbook for example World History: Patterns of Civilization. Prentice-Hall, 1987.

Vocabulary:

Basic Terms	Arabic Terms
muezzin	Shadah
mosque	Salat
Ramadan	Zakat
almsgiving	Hajj
Qu'ran	
Islam	
Muslim	
Hajj	
Prophet Mohammed	
monotheism	
Mecca	
Kaaba	

Strategy:

Anticipatory Set: 1. Play the first 3-5 minutes of tape (call to prayer). Ask students to brainstorm what this may be and what they already know about Islam.

2. Introduce vocabulary and clarify definitions.

3. On the chalkboard, pose questions that students should be looking for while viewing the tape:
What is Islam?
How do Muslims practice this faith? or What does it mean to practice this faith?

Lesson: 1. View the tape Islam in its entirety.
2. Class discussion of the questions posed.

Closure and/or Extending Activities:

In small groups, develop a chart to compare and contrast the three religions - Islam/Christianity/Judaism. This chart should include both similarities and differences.

There are exceptions made for children, sickness, expectant mothers, and travelers.

The fifth pillar is the Hajj - The pilgrimage to Mecca. Mecca is a holy city in Saudi Arabia and the center for prayer in Mecca is the Kaaba. This pilgrimage should be undertaken by a Muslim if he or she can afford it and are physically able.

The basic book of Islam is the Qu'ran which is the word of God brought to man through the prophet Muhammed. The Qu'ran is written in Arabic and is meant to be recited as it is the direct word of God given to Muhammed. Recital of the Qu'ran is an expression of worship due God. Like the Christian Bible, it is a series of instructions for the leading of a good and pious life. It stresses among many things honesty, integrity, and responsibility to the community and the family.

Out of the Qu'ran has developed a vast body of laws and customs/traditions that influence every aspect of daily life. An example of this would be dietary regulations, business practices, family loyalty, honesty, modesty, and public and private behavior.

We will now ask several people who are Muslim how they feel about these beliefs and practices in their daily life and work.

Interview

Questions:

Islam

The call you have just heard echoes around the Islamic world five times a day. What is this faith that originated in the Middle East, holds one-fifth of the world's population, and is the fastest growing religion in the world today? It is Islam. Is Islam the same for everyone?

You heard the muezzin's call. What is he saying? "There is no God but God. Witness one God. Witness Mohammed as his prophet."

The first pillar of Islam is the **Shahadah** - There is but one God and Mohammed is his messenger\prophet.

Allah is the same God that everyone in the Judaic and Christian world also worships. Islam is very, very close to the other two monotheistic religions.

The second pillar of Islam is **Salat** - This is prayer five times a day. The noon prayer on Friday is said in community worship. The prayer is usually said in the mosque which is not like a church. There are no priests or ministers in Islam. Prayer is a very personal experience.

The noontime prayer on Friday is similar to both the Christian and Jewish holy days of common worship.

The third pillar is **Zakat** - This is the giving of alms. Every Muslim has the obligation to contribute through the mosque and can also give directly to the less fortunate in the neighborhood and family. For example, this lamb will be slaughtered for the needy.

The fourth pillar is **Ramaden** - This is the lunar month that occurs at different times in the Muslim year. From sunrise to sunset a Muslim abstains from food, drink, and sex.

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Inventing Egyptian Agriculture For the Twenty-first Century

Report of Jack M. Weatherford
United States Department of Education's
Fulbright-Hayes 1989 Summer Seminar in Egypt:
Transition to the Modern World

Hag Taha walked cautiously across the peanut field with his neighbor. Hag Taha's crisp, blue galabiya hung stiffly on his body in the still heat of the Sahara summer afternoon. He gestured faintly at the yellow spots discoloring some of the peanut leaves between the deep yellow flowers. He talked calmly but with apparent concern about the yellow spots to his friend, a fellow farmer. They both knew that the peanut crop now stood at a critical stage. When the peanuts flower, they begin to produce their underground nodules that will become the peanut crop. At this crucial juncture in the growing cycle, even healthy and seemingly vigorous plants may be susceptible to a sudden attack of fungus, insects, nematoda or bacteria that silently and quickly decimate the crop and turn a promising harvest into catastrophe for these poor farmers.

Hag Taha and his neighboring farmers each cultivate approximately three feddans (3.6 acres) in the village of South Tahrir in the Sahara desert west of the Nile delta. They are not desert farmers by heritage: they are descended from the fellahin of the agriculturally rich delta area. But Egypt has outgrown its narrow strip of green valley in the Nile River region, and now the country must move into the 96% of the country that is uninhabited desert. Now, at the end of the twentieth century, Egypt has well over 50 million people, and even though the nation has over a million square kilometers, those 50 million are crammed into a space smaller than the Netherlands or smaller than any two New England states combined. This density makes Egypt, along with Bangladesh, one of the most densely populated places on the planet.

In order to ease this crowding and to feed the growing population, men like Hag Taha and his neighbor have moved onto desert lands. They are now working together with the men of the Desert Development Center to invent Egyptian agriculture for the twenty-first century.

Dr. Adli Bishay directs the American University in Cairo's Desert Development Center which began as a research project in 1979 and grew into an independent unit of the university in 1985. Through Dr Bishay's efforts and those of Associate Director Hosny El Lakany, I was able to visit their demonstration project in June, 1989 as a part of my research project for the Fulbright-Hayes Summer Seminar in Egypt.

Desert communities such as South Tahrir constitute

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Egypt's New Lands. They are located just outside the delta and about half way along the desert highway from Alexandria to Cairo. On the day of my visit in late June, the highway was crowded with air-conditioned Mercedes and Buicks. The wealthy people of the Arabian peninsula and the Egyptian workers in the foreign-oil fields had loaded their cars and were headed for summer homes on the mild Mediterranean coast near Alexandria. We turned off from the highway at the new car stop and restaurant Omar's Oasis, just below the large roadside billboard advertising Nordic vacations via Scandinavian Air Service. Even though South Tahrir lies less than an hour's bumpy ride from that highway, it is a world with a far different appearance and much different problems.

My guides for the trip were Doctors M. El Lakany and Raouf Khouzam of the Desert Development Center. They introduced me to Hag Taha and his neighbors on one of their weekly visits to South Tahrir to meet with the farmers and move their work out of the offices of Alexandria and Cairo and into the fields.

The desert reclamation projects are now over thirty years old having been started by Nasser. After the revolution of 1952, the new government started an enthusiastic and complex move toward the desert with large state corporations which would open up the lands. They recruited fellahin and put them to work digging irrigation canals and ditches, opening roads, planting windbreaks of Australian eucalyptus and Casuarina trees. The enthusiastic settlers hauled thousands of tons of rich Nile valley silt and spread it and manure over the desert.

Despite all the hopes that the new republic put into conversion of the desert to cultivation, the initial enthusiasm waned as the problems mounted. The cost proved exorbitant, the organization flourished and grew more complex, the farmers did not understand their alien environment. Only meager harvests emerged from the New Lands. The nation lost hope that these projects would simultaneously provide new homes for the burgeoning millions of the Nile Valley and would make the nation self-sufficient in food production. The nation also had the more urgent task of building the Aswan dam to provide a steady source of water and the prevent the annual flooding of the Nile. Harnessing a river, even one as mighty as the Nile, proved easier to do than conquering the Sahara.

The farmers of the New Lands tried to cultivate their crops the only way that they knew. Over thousands of years the farmers of Egypt developed the right way to farm. The ancient farmers of Egypt were some of the first in the world: they helped invent agriculture as they grew their earliest crops of barley and other grains approximately 8000 years ago. They not only helped invented cultivation, but they

also practiced it with great success. On the basis of the agricultural surpluses of the farmers of the Nile, arose the great civilization of ancient Egypt with its Pharonic tradition. Only because of the successful farmers of the Nile could the Pharaohs erect the great pyramids of Giza, carve the tombs in the Valley of Kings, or make the colossal statues of Ramsis II. Alexander the Great conquered Egypt in 341 B.C. for the food resources that it offered his great army. Caesar did the same again in 33 B.C. and made Egypt the grainary of the Roman Empire. No empire from Alexander and Rome to the Ottomans and finally the British succeeded in making a great Mediterranean empire without the farmers of Egypt.

After the ancient Egyptian farmers brought the most fertile areas of Upper Egypt under cultivation, they began to expand into the desert. As early as 1840 B.C. the Egyptians of the Middle Kingdom built the world's first dam to divert Nile water into the fertile Fayoum, the fertile basin of a prehistoric lake in the desert west of the Nile. Not until much later in the modern era did attention turn to the fertile soils of the delta. Particularly under Muhammed Ali in the first decades of the nineteenth century, the farmers drained the swampy areas of the delta, built dikes to control the flow of water, and made ditches for systematic irrigation of the land. With new cash crops such as long-strand cotton, the land flourished. Instead of feeding the Romans as they had done nearly two thousand years ago, Egypt of the eighteenth century produced cotton for the thriving industrial mills of Britain.

Finally, by the time of President Nasser, Egypt had outgrown both river valley and the delta, and the great push into the desert began. Many of the initial problems of this effort came from the large scale and the centralized bureaucracy which controlled it. Later, President Anwar Sadat recognized this problem and revived the project in his Open Door policy by privatizing the great state operation. He gave parcels of three feddans each to the workers who had been a part of the reclamation effort of the government corporation.

Men such as Hag Taha and his neighbors then had to face the problem of how to do for themselves with the little education that they had and with the little information that the government and its experts shared with them. The government no longer paid them a salary, but now they owned their own lands. This meant that the farmers alone now had responsibility for that land, and they alone benefited or suffered from their farming practices.

About this time the Desert Development Center of the American University in Cairo initiated a new program in desert farming. Under the leadership of Dr. Bishay, the

Desert Development Center requires that all of its programs be 1) technologically feasible , 2) economically viable, 3) socially acceptable, and environmentally sustainable. To integrate all of these requirements into a single program, the center created a demonstration project in South Tahrir in the governate of Beheira.

First, the Desert Research Center team began to work with one of Taha's neighbors. Taha watched carefully as the agricultural experts came out from Cairo and Alexandria and the neighbor took advantage of them without following their advice. Taha, however, eagerly tried to incorporate into his farming what the agricultural experts were advising his neighbor. His earnest efforts at change attracted the attention of the agriculture team who began working with him. Taha rigorously followed the advice of the team, and together they began to work toward finding the best crops and growing regimen in this hostile environment.

The Desert Development Center team working with Taha decided that contrary to the initial efforts to reclaim the desert that it could never be farmed in the same way as the Nile valley. The farmers and the researchers need to treat it as a desert and stop hauling Nile silt to transform the sand. They had to develop the appropriate way of farming the desert.

The team worked to apply the known information available for desert agriculture. But rather than just telling Taha and his six fellow farmers how to do it, they worked with him. He was asked to grow a plot using their advice and their protocols for fertilizer, insecticide, and herbicide application and way of farming without repeated hoeing. He was asked to continue growing an area about a third that size as a control. He farmed the control plot with the same methods and technology he had always used. In this way, Taha himself would be experimenting with the procedure, and he would be the one to decide which worked better for him.

The team did not abandon Taha. The team included agronomists, plant scientists, and specialists in pests and insecticides as well as economists, a rural sociologist and even an anthropologist. They returned every two weeks to inspect his fields, answer questions, check on his application of their procedures, and to solve the inevitable problems that arose. None of them had the answers, but by working together they created a new process that allowed them to find the answers. Not only was this a new way of farming, but it was also a new way of getting professional researchers to work together in an integrated approach to development.

The team worked together with Taha and other farmers to find solutions to the problems of desert agriculture. The researchers also promised to make good Taha's losses if he

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incurred them after following their advice. At times they had to make good on that promise.

The team soon discovered that the best protocols developed in laboratories and experimental plots may not work in practice for some very simple reasons. After supplying the chemicals for the first year, the demonstration farmers were expected to buy their own, if they wanted to use the same procedures the following year. In an accident that could not have been foreseen by the best protocol, one farmer received herbicides that had been improperly prepared, and the chemicals destroyed his crop. But the project compensated him for his losses.

Another unexpected result came after the team devised a chemical procedure to treat citrus trees that cost only about 15 L.E. ($6.00) per feddan. This saved them from having to till the soil for weeds and thus lose a great amount of labor and soil moisture. Through forces beyond the control of the farmers or the project, the chemicals rose in price to 69 L.E. ($22) on the local market.

Despite these difficulties and adjustments, Taha's harvests increased, and he prospered a little more each year. He diversified his crops to include sorghum in place of some of his maize crop. Traditionally he had cut the leaves from the maize to make fodder for his goats, donkey and water buffalo, but this gradual stripping decreased the maize yields by nearly a third. The farmers could see that this was inefficiency, but they did not know how to feed their animals in a desert; they had no alternative crop. The Desert Development Center team found the suitable alternative in fodder sorghum that required minimal space and could be harvested three times a season. The team then brought in a blue desert corn that could be grown with less damage to the soil and the neighboring plants. The somewhat skeptical farmers quickly adopted the innovations once they saw a viable and affordable alternative.

Today Hag Taha's farm thrives. He has grape arbors next to his house as well as pomegranate bushes, and trees of guava, apricots, peaches and limes. In addition to peanuts, maize and sorghum, he grows squash, turnips and okra. His ducks thrive, and his goats and water buffalo have sufficient fodder from the sorghum patch. By the standards of developed countries and even by the standards of many urban Egyptians, Taha is a very poor subsistence farmer with only a small margin of profit. But by the standards of most African, Asian and Latin American farmers, Taha's story is one of great success.

Taha's family flourished and his children were well fed and able to attend the village school. He even made enough profit to save money. Last year he make the pilgrimage to

Mecca, a trip that cost around $3,000 but with this religious act of piety, he earned the honorific title of Hag. His profit goes into practical investments as well as religious ones. He invested part of his money in an ownership share of a tractor.

Hag Taha now saves his money in stone. The adobe house on his farm project is surrounded by stacks of ice-white limestone from the quarries near Cairo and with stacks of smaller concrete bricks that he made himself. When he gets enough of these materials, he will use the stone to lay the foundation of a new home which he will build himself with the bricks.

What Hag Taha has done for himself and his family may be impressive, but what he is doing for his community has much greater impact. He has become an innovative leader. He is proof to the other farmers of the community that innovation can improve their crops and thereby their lives. He has become a satellite for change. From him other changes can be broadcast throughout the community. Hag Taha is the vital link between the international research and professional segment of world agriculture and the local farmer. He is a conduit of information into practice.

The success of Hag Taha has also helped to create an optimistic mood of innovation throughout the community. They have seen what innovation can do; they know that it can give them a better life. Now, someone is working with them to help them to change rather than just telling them that they have to do it. In this new optimism, the farmers have built their own school, adding one brick room at a time to the slowly lengthening building.

The spirit of innovation has created some unexpected developments in the community. One of Taha's neighbors was impressed by the success of drip irrigation, but he had no prospect of ever acquiring sufficient money to buy the expensive equipment. He improvised his own system using old plastic jugs and metal cans with a hole punched in the bottom. He planted one of these discarded containers beside each of his plants. After filling the container with water, the water gradually leaks into the ground at the root of the plant.

No one knows what potential, if any, this new irrigation system may have, but its innovation is indicative of the new spirit found among the farmers of South Tahrir. They are willing to try new ways. The Desert Research Center is also continuing to search for new solutions to the problems of desert life. The center's scientists working at their research station in Sadat City have expanded from analyzing cultivation, to looking at the integrated model of living and working in the desert. Using traditional Islamic and Coptic

home designs from Upper Egypt, they have built a large brick building with a courtyard and a series of domes. The desert scientists found that the domes cooled the homes efficiently. In the flat-top home, the roof receives 100% of the suns rays all day. The dome, however, always shades a part of the roof from the hot rays. This creates a variation in temperature beneath the dome, and the variation causes the air to circulate, as the sun moves across the sky and thus across the outer dome. The dome then serves as a sort of passive fan. The air inside the house averages ten degrees Celsius cooler than the air outside the house. This contrasts with an average increase of four degrees in house temperature in flat-top houses.

Hag Taha and the other farmers are not yet ready for such radical changes in their lifestyles. They cannot afford to risk change on such a massive scale. Nor are they ready to employ the solar energy systems of the Desert Development Center, or the use of a large courtyard which would detract from their arable land. But, when the day comes that they are prosperous enough and ready for these changes, the Desert Development team will still be there to work with them. The farmers and the researchers may not have solved all the problems of desert farming, but they have created a system to solve the problems. They have found a way for researchers and farmers to work together in South Tahrir.

By working in a demonstration project such as the one at South Tahrir as well as conducting research, publishing and application, the Desert Development Center is fulfilling its theme "Toward Sustained Desert Development for Egypt's Future." They are continuing academic work but at the same time are adhering to their stated policy of "treating the desert as a desert" and "maintaining a balance between old traditional practices and new development activities."

Through satellite farmers such as Hag Taha, the Desert Development Center has proven that the desert can be farmed as a desert, and it need not be transformed into something that it is not. In proving this, they have begun to reinvent Egyptian agriculture, a process that is far from finished, but they have made the crucial first success. They have helped Hag Taha and his family survive and attain a modest prosperity, and through Hag Taha they have improved the agriculture and the life of South Tahrir.